

Dylan D'Silva

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Education

UNIVERSITY OF CENTRAL FLORIDA

AUG 2024 - PRESENT

- Degree: Master of Science in Aerospace Engineering
- Focus: Orbital Mechanics / Guidance, Navigation, and Control

UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

AUG 2020 - DEC 2023

- Bachelor of Science, Aerospace Engineering
- Minor in Astronomy

RELEVANT COURSEWORK

Orbital Mechanics, Optimal Aerospace Systems, Aerospace Systems Design, Estimation of Dynamical Systems

Skills and Proficiencies

- Python, C++, Git, MATLAB, FreeFlyer, General Mission Analysis Tool (GMAT), Siemens NX, Systems Tool Kit (STK), SPICE Toolkit from NAIF (Python)
- Adaptability, Active Listening, Critical Thinking, Organization, Oral/Verbal Presentation, Problem Solving, Proposal Writing, Research, Technical Writing, Teamwork, Teaching and Instruction

Experience

AUTONOMOUS QUADCOPTER GNC DESIGN

FEB 2025 - MAY 2025

- Investigated the use of autonomous quadcopters in agricultural monitoring practices and racing applications.
- Researched common sensor technologies and obstacle avoidance techniques for autonomous systems and their suitability to each use case.
- Simulated a quadcopter navigating obstacles with a stereo camera, RRT for setpoint determination, and a cascaded PID controller for motor actuation commands using MATLAB/Simulink.

MARS SATELLITE CONCEPT ORBIT DESIGN AND ANALYSIS

JAN 2023 - MAY 2023

- Designed a Mars satellite constellation meeting stringent science and communication requirements.
- Estimated orbit transfer times, launch windows, and delta-V budgets.
- Conducted thorough analyses of power requirements, link budgets, communication windows using FreeFlyer.
- Researched and simulated fuel optimal low-thrust trajectories for Earth-Mars transfers using NASA's General Mission Analysis Tool.
- Worked with team members to balance the needs of power, communication, propulsion, thermal, and attitude control subsystems, as well as the science payload.

ASTRONOMY DATA ANALYSIS AND SIMULATIONS

AUG 2022 - MAY 2023

- Analyzed data from the SIMBAD database on Cepheid variables and used the period-luminosity relationship to estimate their distances from Earth to their host galaxies.
- Employed Monte Carlo methods to demonstrate the effect of Malmquist Bias on observations and the results of possible corrections to this bias.
- Fit data of galaxies with active galactic nuclei to Sérsic profiles and Fourier modes using GALFIT to separate observations of galactic disks from observations of active galactic nuclei.

BITCRAZE QUADCOPTER CONTROL DESIGN

AUG 2022 - DEC 2022

- Designed an LQR controller for a Bitcraze Crazyflie quadcopter. Performed state estimation using a Kalman filter.
- Simulated and refined the LQE system in Python using PyBullet, then implemented the system in hardware.
- Implemented a range finder/optical flow sensor, and IMU to provide state feedback control.

NASA MICRO-G NEXT DESIGN CHALLENGE

OCT 2020 - JUNE 2021

- Designed drive train housing and linear actuation mechanism of a lunar coring device that met the requirements of the NASA Micro-g Experiment Design Teams Challenge.
- Selected components to comply with the Neutral Buoyancy Lab's allowed/prohibited materials.
- 3-D printed components and assembled prototype device for testing in the Neutral Buoyancy Lab.

Leadership

TREASURER, ILLINOIS SPACE SOCIETY

MAY 2021 - MAY 2022

- Managed 501c(3) organization finances for technical projects and educational outreach initiatives totaling almost \$50,000 as well as financial interactions with the University of Illinois.
- Assisted technical teams to apply for and receive over \$35,000 in grants and funding.
- Managed funds for the UIUC teams in the Spaceport America Cup, NASA Micro-g NExT and RASC-AL challenges, the development of a student researched and designed hybrid rocket engine, and educational outreach.